



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/748,262	12/31/2003	Ming-Cheng Hsiao	BHT-3214-78	6586

7590 04/07/2006

TROXELL LAW OFFICE PLLC  
SUITE 1404  
5205 LEESBURG PIKE  
FALLS CHURCH, VA 22041

EXAMINER

FEELY, MICHAEL J

ART UNIT	PAPER NUMBER
----------	--------------

1712

DATE MAILED: 04/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/748,262

Applicant(s)

HSIAO ET AL.

Examiner

Michael J. Feely

Art Unit

1712

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Pending Claims***

Claims 1-9 are pending.

### ***Previous Claim Objections***

1. The objection to claims 1-3 and 5 has been overcome by amendment.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 5, 6, 8, and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 5, 6, 8, and 9 further limit the high thermal conductive *metal* powder with materials including boron nitride and carbon nano-tubes. These materials are not *metal* powders.

### ***Claim Interpretation***

4. In light of the rejection under 35 USC 112, 2<sup>nd</sup> paragraph, component (4) has been interpreted as, *a high thermal conductive powder* (not metal-specific).

***Previous Claim Rejections - 35 USC § 103***

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
6. The rejection of claims 1-5 under 35 U.S.C. 103(a) as being unpatentable over Chiou et al. (US Pat. No. 6,809,130) has been withdrawn.
7. The rejection of claims 1-3 under 35 U.S.C. 103(a) as being unpatentable over Kashiwabara et al. (JP 200-265040) in view of Suzuki et al. (JP 43-6302) has been withdrawn.

***New Claim Rejections - 35 USC § 103***

8. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kashiwabara et al. (JP 200-265040) in view of Suzuki et al. (JP 43-6302).

Regarding claims 1-3, Kashiwabara et al. disclose: *(1)* a high thermal conductive halogen-free phosphorous-free retardant resin composition (Abstract; paragraph 0004), comprising: (1) an epoxy resin, having bi-functional and poly-functional groups, in an amount of 10 to 50% by weight of the total composition (Abstract; paragraphs 0004-0006); (2) *a curing agent, preferably enhancing thermal resistance* (paragraph 0005); (3) an inorganic powder, in an amount of 10 to 50% by weight of the total composition (Abstract; paragraph 0007: *aluminum hydroxide*); and (4) a high thermal conductive powder (Abstract; paragraph 0007: *carbon black*);

*(2)* wherein said epoxy resin has an epoxide equivalent of 150 to 100 (paragraph 0005; Examples); and

*(3)* wherein said epoxy is selected from *see claim for list* (paragraph 5; Examples).

Art Unit: 1712

Kashiwabara et al. provide little limitation regarding their curing agent, with a preference towards one that provides thermal stability (paragraph 0005). However, they are silent regarding the use of claimed compound (A).

Suzuki et al. disclose a hardener for epoxy resins that corresponds to the structure of claimed compound (A) (Abstract). These curing agents provide improved heat stability of the hardened epoxy resins (Abstract). In light of this, the hardener of Suzuki et al. would appear to be a logical fit for the hardener to be used in the composition of Kashiwabara et al. because it provides improved heat stability to the hardened epoxy resin composition.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use claimed (un-reacted) compound (A) as a hardener, as taught by Suzuki et al., in the composition of Kashiwabara et al. because Suzuki et al. disclose that this hardener provides improved heat stability to hardened epoxy resin compositions.

It should also be noted that Kashiwabara et al. fail to explicitly disclose an amount of conductive (carbon black) material. However, Applicant fails to show criticality for this range. Furthermore, the amount of carbon black would have been recognized by one skilled in the art as a result-effective variable. The amount dictates desired properties including coloring and conductivity. A maximum and minimum quantity would have been inherently present to ensure the desired properties and work-ability of the overall composition.

In light of this, it has been found that, “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation,” – *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955); and, “A particular parameter must first be recognized as a result-effective variable, i.e., a

Art Unit: 1712

variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation,” – *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use 10 to 30 wt% of conductive powder in the combined teachings of Kashiwabara et al. and Suzuki et al. because this filler quantity would have been recognized by the skilled artisan as a result-effective variable, wherein a maximum and minimum quantity would have been inherently present to ensure the desired properties and work-ability of the overall composition.

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kashiwabara et al. (JP 200-265040) and Suzuki et al. (JP 43-6302) in view of Chiou et al. (US Pat. No. 6,809,130).

Regarding claim 4, the combined teachings of Kashiwabara et al. and Suzuki et al. disclose in inorganic powder selected from a list including aluminum hydroxide; however, they are silent regarding an average particle size of between 0.01 micron and 5 micron.

Chiou et al. are as set forth in the previous Office action and incorporated herein. Chiou et al. disclose a relatively analogous system (*see column 2, line 25 through column 3, line 45*), wherein fillers, such as aluminum hydroxide, are used. The average particle size of these powders ranges from 0.01 micron to 5 micron (*see column 5, lines 4-7*). The teachings of Chiou et al. demonstrate that this particle size range is recognized in the art as suitable for use in this type of epoxy resin system.

Art Unit: 1712

In light of this, it has been found that, “The selection of a known material based on its suitability for its intended use supports a *prima facie* obviousness determination,” – see *MPEP 2144.07*.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use an aluminum hydroxide filler having an average particle size range of 0.01 micron to 5 micron, as taught by Chiou et al., in the combined teachings of Kashiwabara et al. and Suzuki et al. because the teachings of Chiou et al. demonstrate that this particle size range is recognized in the art as suitable for use in this type of epoxy resin system.

#### ***Allowable Subject Matter***

10. Claims 5, 6, 8, and 9 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

#### ***Response to Arguments***

11. Applicant’s arguments, see page 6 of the response, filed January 20, 2006, with respect to Chiou et al. have been fully considered and are persuasive. The rejection of claims 1-5 over Chiou et al. has been withdrawn.

12. Applicant’s arguments filed January 20, 2006, with respect to the combined teachings of Kashiwabara et al. and Suzuki et al., have been fully considered but they are not persuasive.

In response to applicant’s argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the

Art Unit: 1712

teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

In this case, Kashiwabara et al. desire a curing agent that provides thermal stability, and Suzuki et al. set forth a curing agent that provides thermal stability (*see rejection above*); hence, these teachings appear to be a logical combination.

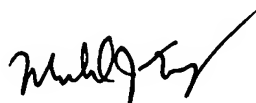
Art Unit: 1712

*Communication*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Feely whose telephone number is 571-272-1086. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael J. Feely  
Primary Examiner  
Art Unit 1712

March 31, 2006

**MICHAEL FEELY  
PRIMARY EXAMINER**